LEW Techniques’ dedicated thick film manufacturing capability offers a fast build-to-print service for metallised circuits on various materials. From double-sided circuits with fine lines, metallised vias and complex substrate profiles, to simple two- or three-print-sided monitor blocks (with electrically connected wrap over edges as required), our manufacturing know-how and dedicated in-house facilities provide customers with a comprehensive and versatile service for demanding applications. Our production facilities enable us to produce just a few sample parts or production runs of many thousands of parts.

### Capability Outline
- Various substrate materials including alumina, and AlN
- Metallisation schemes suitable for soldering, wire-bonding and epoxy attach
- Wrap over edge printing
- Angled face printing
- Metallised thru holes
- Dielectric solder dams and protective glazes
- Photo imaging for fine lines
- Pre-fixed gold/tin solder preforms (AuSn)
- Printed/reflowed solder patterns (AuSn, SnAg)
- Laser profiling and drilling
- Diamond sawing for superior edge quality
- Comprehensive testing facilities to ensure product quality

### Screen Print/Photo Image
The standard process for generating circuits with thick film metallisations is to screen print metal and dielectric inks using high quality metal mesh screens or stencils. The required circuit is directly printed onto the ceramic substrate. The printed ink is then fired in air at >800°C to fix the metal/dielectric to the ceramic. Typical fired film thickness is 6-12µm. This is the standard method providing the highest flexibility and the lowest cost.

For applications requiring very fine line patterns some metallisations can alternatively be resolved after printing and firing using photolithography. This process can generate thin tracks and gaps with sharp corners. It is also possible to combine both screen printing and photo-imaging methods where appropriate.

### Substrates
- As-fired or lapped 96% alumina (Al₂O₃)
- Opaque (black) 90% alumina
- High thermal conductivity aluminium nitride (AlN)
- Machineable ceramic
- Sapphire

### Metallisations
- Au (standard). Au wire bondable, epoxy attach or AuSn solderable
- Au (special). Modified Au metallisation with excellent flux free AuSn solderability
- Pt/Au. Platinum doped to improve leach resistance to SnPb and SnAg solders. Au wirebondable
- Pt/Pd/Ag. Doped silver based metallisation for lowest cost. Solderable with fluxed solders. Suitable for Al wire bonding
- AuSn, SnAg solders

Images are not to scale
LEW Techniques specialises in the manufacture of miniature components for the mounting of semiconductor devices. Our in-house capabilities include Thin Film, Thick Film and refractory metallising of ceramics and metals, electroplating, precision dicing, laser machining and marking, atmosphere/vacuum brazing and solder assembly.

To ensure end user compatibility, comprehensive in-house testing includes eutectic die bonding, Au wire bonding, shear strength, peel strength, coating thickness and surface finish measurement, heat testing and He leak detection.

To discuss your application in detail please contact our Technical Sales Department who will be pleased to assist you.